$$\{x|x > 1, x \in \mathbb{N}\}$$

List Comprehension - Quick Generation of List

List Comprehension

- Components
  - for
  - if
  - else

Math World:

$$S = \{2 \cdot x | x \in \mathbb{N}, x < 4\}$$

Python World:

```
S = [2*x for x in range(1,20) if x<4]
```

Case 1

- Q: Generate a list contains square of numbers between 1 and 20.
- A:

```
[x**2 for x in range(1,20+1)]
```

Case II

- Q: Give dictionary D as following:
  `{'a':1, 'b':2, 'c':3, 'd':4, 'e':5}`
  Please generate the letters who has the value which is greater than or equal 3.
- A:

```
[x for x in D.keys() if D[x]>=3]
[k for k,v in D.items() if v>=3]
```

Practice

- Review assignment IV
- Warm up for assignment V

Practice

- Q:
  It's about height of people, please design a program to summarize and statistic the data in data file given in TA session.
- Data file: pastie.org/1393033
- Architecture file: pastie.org/1393073

Functions

- Load from file
- Summary of heights
- Lookup a person's height
- Person above a height
- Print height report (three in a row)

Load from file

- Load data from a file into a dictionary
  - Key: name
  - Value: height
  - Hint: as what last assignment does

Summary the Height

- Print out the following three information:
  - Highest height
  - Lowest height
  - Average height
- Hint: try to sort the data by values, and pick up the head and the tail of the sequence.

Lookup a Height

- Ask a name and query the height of it
- Hint: as what last assignment does

Person Above Height

- Find out who is taller than specific height
- Hint: use “List Comprehension”

Print Report

- Enumerate all people and their height each by each
- Make output three records in row, like following:
  a, 152; b,180; c, 190;
  d, 161; e, 229; f, 191;
  g, 175; h, 159;
- Hint: Embedded a counter to your loop

That's all, just do it.